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&c. &c. &c.

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OBSERVATIONS

ON THE

CASUAL AND PERIODICAL

INFLUENCE

OF

PARTICULAR STATES OF THE ATMOSPHERE

ON

HUMAN HEALTH AND DISEASES,

PARTICULARLY

INSANITY.

WITH

A TABLE OF REFERENCE TO AUTHORS.

BY THOMAS FORSTER, F. L. S.
Corresp. Memb. Acad. Nat. Sciences at Philadelphia, &c. &c. &c.

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1817.

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TO

F. G. SPURZHEIM, M. D.

AUTHOR OF "OBSERVATIONS ON THE DERANGED MANIFESTATION OF THE MIND," &c. &c.

I HAVE no fondness for Dedications, as you well know; since I have always been of opinion with yourself, that the seeking for patronage, and the sheltering oneself under the authority either of renowned individuals, or of societies, were things very hurtful to the cause of Science. Nevertheless have I taken this plan in the present Work, for the sake of acknowledging my debt to yourself for what I think the most useful part of these observations.

During our walks in the mountainous countries through which we travelled together, we had often opportunity of talking over the subjects of our inquiries. And I was much struck with the curious things you told me about the Periods observed by many diseases of the Brain, as well by those of what is called the automatic Life. I began from this time to remark the Periods of Diseases with new views. I had long noticed the effects of the Atmosphere on the body; but I had not till now thought that this Influence from without could be periodical. I began also to find other sorts of Periods, besides those which happen once in twentyeight days, on which you made such curious remarks. I went on with these observations, and made them my chief employment ever since I left you at Capel Cürig, in August, 1815. I have taken various occasions to gather information from persons subject to fits of insanity, and of other periodical nervous complaints, respecting these aforementioned periods. And I have strengthened in my own mind, by numberless facts, the justness of your belief respecting the being of some periodical Influence from without, on the functions of the Brain and Nerves. In none of the many Madhouses which I have seen, have I found many useful observations already made on the Periods of the Diseases of the Mind. But these Establishments, as you well know, are often so shamefully neglected, that no good systematic plan of observation has as yet been set on foot in them respecting the disease, for the care and cure whereof they were planned. Already are you too well aware of the truth of this remark, having brought into view, by your new Work on Insanity, the sorrowful state of those who are bound in fetters in the cells of these houses. I neglected, however, no opportunity which offered itself, to satisfy myself of the regular operation of this periodical Influence, which you have since mentioned in your Works, and which I regard as the only useful part of the hasty observations that I have given out here with the view that we may be helped in our investigations by the assistance of others, who may luckily be placed in situations which give them the range of a wider field of inquiry.

Although you have left Great Britain without establishing so fully in the minds of British Anatomists the truth of the doctrines respecting the Organs of the Brain, as the clearness of the proofs seemed to warrant, you have successfully contended against those who have opposed them. Your opponents have shown that their knowledge of Anatomy and Physiology was too inferior to your own, to assist them in the attack, and have resorted to ridicule and other means, which the weak have always had recourse to, in the absence of Argument. But though it will be some time before the Doctrine of the Organs of the Brain will be fully established among the multitude, yet the valuable Observations on Insanity, and its periodical exacerbations, which you have given the World in your late Work, will give rise to a better knowledge and treatment of that disease. Already have I foreseen that your Book will call forth inquiry. And different Practitioners will take hints from various parts of that useful Volume, and Science and Medicine will be improved. I have paid particular attention to the Periodicity both of diseases in general, and of Insanity in particular, since some atmospherical phaenomena which I have observed during the times of these Periods made me think that we shall be able, by repeated observations, to unfold the cause of many periodical illnesses, so as to foreknow their coming, and guard against their effects.

Many of these opinions, like those of Dr. Gall and yourself, may be opposed and ridiculed by persons who have not been attentive enough to this part of the subject. But we must call to mind, that all new doctrines have been opposed at first, and Science has ever been slow and wavering in her march. Fair opposition, and real argument, are to be wished for, as they bring out the truth; but the attacks of those who, with the *ratiocinatio verbosa*, stigmatized by Darwin as the unphilosophical jargon of ignorance and want of philosophy, exercise the *vis verborum* against whatever they cannot understand, must be left unnoticed and unanswered. A celebrated author says on a similar occasion,— *The Moon pursues her course unmindful of the dogs that bay at her:* —we must pursue our inquiries, and recollect, that—Mit der Zeit kommt die Wahrheit an den Tag.

Yours ever,

THE AUTHOR.

P. S. I may add, that even since the printing of these sheets, I have found passages in the works of many celebrated physicians relating to the monthly periods of diseases, which were discovered too late to be referred to in the Index of Reference at the end: we cannot, therefore, be accused of inventing a theory, by the publication of observations which must excite inquiry, and thereby verify or confute our opinions.

*

* *

PREFACE.

THE doctrine which I have endeavoured to establish in the following sheets may be thus briefly comprehended: — There are peculiar states of the atmosphere, independent of its temperature, weight, or moisture, which have a particular influence on human health and disease, as well as on other natural phaenomena. This influence, as it depends on different states of the atmosphere at different times, is various in its mode of operation: hence it not only causes a general disturbance of the health, but has likewise considerable share in producing the varieties of the symptoms. These peculiar conditions of the atmosphere happen at times apparently very uncertain, and their influence is therefore denominated casual.

There is likewise, apparently independent of the above, a periodical influence, occurring twice in the course of twentyeight days, and which is of very general operation: it affects immediately the brain and nervous system, causing a general increase of irritability of the whole body, and it lessens the capability and relish for intellectual exertion. Its effect is greater or less in different persons, in proportion to the susceptibility and weakness of their constitutions. Persons who are very irritable are liable to feel this influence at both the above periods, and it often lasts for several days; but strong and healthy individuals only feel it once in the month, and with them it is trifling, and of short duration. Moreover, healthy persons who are affected at one time in the month, are not affected at the other: hence these times may be regarded as two distinct periods, each of which recurs once in about twentyeight days, and they are therefore called the monthly periods of irritability. At these periods the symptoms of all chronic complaints are exacerbated; and headach, epilepsy, catalepsy, and various nervous diseases to which there may be a predisposition, are most liable to happen. The symptoms of various sorts of insanity are worst about this time, but particularly the melancholic kind;

hence suicides from disease are more numerous. In females, the catamenia usually takes place at one or other of these two periods, and when irregular, sometimes occurs at both. Parturition generally takes place at some one of these periods, and consequently abortions are then more to be apprehended than at other times in the month. Finally, wounds heal less readily, hydrophobia is more common, infectious diseases have crises, and all those phaenomena occur which can be ascribed to increased irritability. The periods do not seem to coincide with any exact time of the moon, but their occurrence twice in a lunar revolution is a circumstance worthy of notice.

There are also diurnal periods of diseases, some paroxysms occurring at stated hours, as at noon, two o'clock, six o'clock, midnight, &c. &c. There are likewise periods of diseases which occur every second, third, or fourth day. Diseases which observe any of these diurnal, tertian, or quartan periods, have nevertheless their worst paroxysms (at their accustomed hours) during the time of the monthly periods.

Some diseases have particular periods of their own, or terms of duration, which last many months, independent of the other periods. These disorders, as well as those before described as happening from the casual influence, are worse at the monthly periods.

Some diseases are frequently found to recur at nearly the same time of year for several succeeding years: hence there are annual periods of diseases, which, while they last, are worse at the times of the monthly influence.

Some periods seem, independent of any external influence, to have been created or altered by habit; as, for example, the regular times of many natural functions, of sleeping, &c. &c.; the latter is naturally a nightly function, interrupted only by artificial life and manners. Such established periodicity should be distinguished from that which results from atmospherical influence.

Finally, in derangements of the mind, the periodical influence only causes an exacerbation of the paroxysms, while the peculiarities of the symptoms depend principally on the particular organization.

The periodicity of diseases should be known from its importance in the cure. It is confirmed by collateral observation on animals and plants, and is conformable to the phaenomena of Nature in general.

How far the above doctrine be correct, future observation may show. It has been impressed on my mind by observation and analogy, and has not arisen from theoretical speculation. I have endeavoured, in the following sheets, composed in haste, to illustrate it by a few cases never before published, and I have subjoined references to others, and to works on similar subjects, together with proposals and a plan for Journals likely to bring facts of this kind into a conspicuous point of view. And I have ventured to obtrude my observations, imperfect as they are, on the notice of the Public, with the hope of exciting attention to a subject which seems to be of importance.

T. F.

Spa Lodge, Tunbridge Wells, 1817.

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SECTION I.

THE HUMAN HEALTH IS INFLUENCED BY ATMOSPHERICAL CAUSES.

It has been a popular notion, time out of mind, that atmospheric changes have an influence on the state of human health. And such a belief appears to be founded on reason: for, since a number of persons, of various ages, of dissimilar constitutions and habits of life, and at different places, often become the subjects of disorder at the same time, so is it rational to attribute their malady to some general cause which then prevails. And the occurrence of disorder in particular kinds of weather, or at stated seasons of the year, which some persons experience, naturally suggests the idea that such cause resides in the air.

But it appears to me, that it is not the heat or cold, dampness or drought of the air, which is chiefly concerned in causing disorders, nor the sudden change from one to another of these states; but that it is some inexplicable peculiarity in its electric state. The pain felt in limbs which have been formerly broken, previous to a change of weather, and the disturbed state of the stomachs of many persons before and during thunderstorms, are sufficient, I think, to warrant such a conjecture.

I have observed people with weak health complain of irritability and uneasy feelings, when, after fair weather, the wanecloud has first appeared, with other prognostics of rain; and they have felt relieved after it has actually began, and have said, "Now it is down I feel better."

During what has been called unhealthy weather, when medical practitioners have spoken of the general ill health of their patients, have I remarked circumstances which appeared to denote an irregular distribution of the atmospheric electricity. The manner of the distribution, and the continual and multiform changes of the curlcloud, branching about and outstretching its fibres in every direction; the sudden formation and subsidence of the sondercloud and wanecloud in different places, and the irregular appearance of the other modifications;—the intermitted action of De Luc's aërial electroscope; strong and varying winds; and the abundance of luminous meteors by night; are the circumstances to which I allude*.

It cannot, however, be considered, that atmospheric peculiarities alone produce epidemic and other complaints: they must be regarded as having a compound origin, and as resulting from the operation of peculiar states of atmosphere on persons of particular states of constitution; otherwise, all persons would be affected, which is contrary to experience. There are, probably, innumerable varieties of temperament, of general habits of life, and of preexisting diseases, which, in different subjects, vary the effects of the air. And many persons, perhaps, enjoy a state of health, and perfect action, which may be capable of resisting its evil influence altogether. It would, perhaps, be productive of useful results, if physicians of extensive practice would make accurate meteorological registers during the prevalence of any epidemic or contagious disorders; such as the influenza, which, a few years ago, took a range of some miles round London, but was also prevalent in other parts of the country.

---

* For particulars relative to the forms of the clouds, see "Researches about Atmospheric Phenomena, illustrated by figures of the Clouds, &c." Baldwin and Co. London, 1815.—And *Phil. Mag.*

But though we admit the influence of atmospheric peculiarities on the health, yet the manner and extent of their operation cannot easily be ascertained. They may deprive persons, already weak, of a portion of their electricity, and thus the energies of the brain and nervous system may be diminished: or the atmospheric electricity being unequally distributed in the air, or propagated downward at intervals, it may occasion an irregular distribution of it in our bodies, and produce an irregularity of function. In whatever way the nervous functions may be disturbed, will a disordered action of the digestive organs be the probable consequence; and a state of nervous and digestive disorder being once induced, other diseases may ensue, to which there may be a constitutional predisposition*.

---

* This part of the subject has been well illustrated by Mr. ABERNETHY, in his "Surgical Observations on the Constitutional Origin and Treatment of Local Diseases." — London, 1809. — A work which every medical person ought to become acquainted with.

It is not only the functions of the body which suffer from atmospheric peculiarities; the operations of the intellect, as they depend on the state of the brain, may suffer likewise from any cause which disturbs the animal system. In conformity to this notion, find we that the mind partakes of the irritability of the nervous system in general; and that in particular kinds of weather, which affect the functions of the body, persons find themselves incapable of the same clear and powerful exercise of the mental faculties as they enjoy at other times. It is well known that insane people are worse at particular times. The brain is the organ of animal life, as the other nerves are of that which is called automatic. It is a complicated assemblage of the organs of the different sentiments, propensities, and intellectual faculties; and any one of these may have a morbid action, in proportion as its particular organ be disordered. And further, the organs of the brain are subject to disease similar to other parts of the body;—to inflammation,—to morbid irritability,—to loss of tone,—to paralytic affections. They suffer, also, in common with other parts, from atmospheric causes. Hence the weather can affect the mind through the medium of the brain.

It would seem that there were a more immediate connexion between the peculiar state of the air, and the kind of disorders which might be thereby excited, than what consists in the general disturbance of the nervous system and digestive organs, and the diseases which follow by sympathy, in consequence of a predisposition thereto. For it may be observed, that even of those disorders which are not generally admitted to be contagious, one particular kind will prevail for a long time. Thus, in winter, the different symptoms of that state of body which we call a cold, appear, in some measure, to prevail and vary together; so that it is common to hear people talking of the fashionable complaint. Coughs, for a while, are the prevailing symptoms; sore throats are then the most common. It is in spring that certain kinds of cutaneous eruptions usually appear; and in autumn, that those irregularities in the functions of the digestive viscera, called cholera morbus, &c. happen, and which have been erroneously attributed to eating much fruit.

Catarrhal affections, commonly ascribed to the effect of cold, are said to be of two kinds: one, the mere consequence of checked perspiration; and the other, contagious. I believe both to be connected with atmospheric influence, though one may become infectious afterwards. The state of the digestive organs, and the previous habits of the patient, modify the complaint; but atmospheric peculiarities seem to have great share in exciting and varying the symptoms. Horses and dogs are affected with the contagious catarrh. But grass, carrots, and natural food, given to horses, and lowering medicine to dogs, often can cure it.

With respect to catching cold, I may observe, that either there must be some state of body previous to catarrh which renders it particularly susceptible of a check to perspiration, or some state of atmosphere which has a tendency to excite catarrhal affections; for persons take cold when they take most care, and when they least suspect it. I have been exposed to repeated checks of perspiration, to cold, and to fatigue, and have slept exposed all night to wind and snow, during journies in mountainous countries, without injury; but afterwards, when living higher, in cities, and taking care, have I become the subject of violent catarrhal complaints.

It is possible there may be different states of atmosphere, which act as specific stimuli, and produce their corresponding peculiar diseased nervous actions, which are again still further varied by the particular state of constitution, and other circumstances of the patient.

Even contagious diseases break out at very uncertain periods, and often without any obvious cause, though they are afterwards evidently propagated by infection. Parts of Turkey are said to be visited by the plague every five or six years, while the same disorder appears more rarely in other places. The small pox rages for a time throughout whole tracts of country; at others there is scarcely a case to be met with: the same may be observed of scarlitina and measles. I cannot persuade myself that this is merely the effect of accidental introduction. Is it possible there may be some quality in the air, at particular times, whereby it is fitter for the conveyance of infectious matter? Or, can we suppose the effect of a peculiar state of atmosphere to be sometimes that of rendering the body more susceptible of infection than ordinary?

In artificial society are there so many

causes operating to produce ill health, that the extent of the influence of any one can hardly be ascertained. Inactive habits of life, bad air, irritating food, gluttony, the drinking of spiritous and fermented liquors, the misguidance of the appetites, and the reciprocal operation of the mind and body on each other, have all a tendency to produce disease. But, though these various evil habits of artificial life are all detrimental, yet their kind of influence may be somewhat different: and, in proportion as families, and even nations, may have indulged, from time to time, in any of them, may they have acquired what are called constitutional peculiarities or temperaments; and the diseases dependent on them may be infinitely varied by the subsequent combination of different evil habits in individuals. For example, sedentary occupations have been considered to hurt our health, by causing an accumulation, or irregular direction, of the nervous energy which ought naturally to be spent on the various muscles. Thus patients, suffering great and peculiar nervous irritation, have been relieved by a degree of bodily exercise, which, in common cases, would have caused weariness. The different kinds of spiritous and fermented liquors are, probably, pernicious, by affording a stimulous exhausting to the strength: but whether they prove uniformly injurious in proportion to the quantity of pure spirit which they severally contain, or whether the different kinds of spiritous drinks cause different specific actions, is a point which, I think, has never been clearly determined.

Dr. Lambe considers animal food and impure water as exhausting stimuli; but he seems to think their respective actions on the system as somewhat different. If they do actually contain deleterious substances, their evil influence may be increased, in certain states of disease, by the lacteals losing their discriminating power, and, like common absorbents, drinking up unassimilated or noxious matter, in consequence of a disordered state of the chylopoietic system. In these cases, then, must attention to regimen be particularly necessary. Such a view of the subject as this, enables us, in some measure, to reconcile the beneficial effects of herbfood on many persons, with the apparent health of others who live chiefly on flesh. To return from the digression into which I have unavoidably been led: those persons are most likely to be disordered by atmospheric peculiarities who have the greatest susceptibility of constitution, and at the same time the greatest weakness.

We do not know wherein consists the effect of the air of particular places on people; but, if health consist partly in the equable excitement of all the parts and organs of the body, and if particular airs excite particular organs, then do we see why a perpetual change of place may become beneficial to the health of some invalids.

Finally; it was the opinion of many ancient writers, that, besides occasional pestilence, there was a local influence on the body, whereby, in particular parts of the world, certain diseases would always become prevalent; and they usually ascribed this influence to the state of the atmosphere. Thus, Lucretius, who was certainly an accurate observer of nature, writes—

> Nunc ratio quae sit morbis, aut vnde repente
> Mortiferam possit cladem conflare coorta
> Morbida vis hominum generi, pecudumque cateruis,
> Expediam. Primum multarum semina rerum
> Esse supra docui, quae sint vitalia nobis;
> Et contra quae sint morbo mortique, necesse est
> Multa volare: ea quom casu sunt forte coorta
> Et perturbarunt coelum, fit morbidus aër.
> Atque ea vis omnis morborum, pestilitasque
> Aut extrinsecus ut nubes nebulaeque superne
> Per coelum veniunt, aut ipsa saepe coorta
> De terra surgunt, vbi putrorem humida nacta est
> Intempestiuis pluuiis, et solibus icta*.

---

* LUCRET. *de Rer. Nat.* lib. vi. 1089.

Again, in allusion to local influence—

> Est Elephas morbus qui propter flumina Nili
> Gignitur Aegypto in media, neque praeterea vsquam.
> Atthide tentantur gressus oculique in Achaeis
> Finibus: inde aliis alius locus est inimicus
> Partibus ac membris; varius concinnat id aër*.

Which Virgil has imitated—

> Hic quondam morbo coeli miseranda coorta est
> Tempestas, totoque Auctumni incanduit aestu.
> Et genus omne neci pecudum dedit, omne ferarum,
> Conripuitque lacus; infecit pabula tabo†.

---

* Lucret. *de Rer. Nat.* lib. vi. 1112.

† Virg. *Georg.* lib. iii. 478.

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*   *

SECTION II.

THE HEALTH OF OTHER ANIMALS IS AFFECTED BY ATMOSPHERICAL CAUSES.

EVERY organized body, as far as human sagacity can penetrate, appears susceptible of diseased actions, which may be excited by different causes. In man these causes are various and complicated; and the morbid actions which arise, in consequence, are numerous and dissimilar. And this circumstance may be attributed to his organization and to his mode of life. The influence of the atmosphere, which is one cause, is apt to be overlooked in the human subject, from the variety of others which are continually operating; and which, though by their conjoint influence they predispose to, and often modify or aggravate its effects, have, nevertheless, a tendency to mislead our judgment as to the manner and extent of its operation.

Animals, particularly those which are domesticated, on which alone we can make any accurate observations, have many sources of disorder, though not so great a number as man has. They may suffer from hunger, from unnatural food, from fatigue, and from accidental injury, which can produce disease, and which may be the cause of their becoming affected by peculiarities in the air; notwithstanding their comparative freedom from the evils of intoxication, gluttony, and mental perturbation, that prove so frequently destructive to the human subject.

The occurrence of canine hydrophobia in distant parts of the country at the same time, must be ascribed partly to some peculiarity in the atmosphere; while the circumstance of its occurring at first only in a few dogs, would lead us to consider some preexisting, and perhaps unnoticed, state of disorder in the animal, as conducive to the more violent affection subsequently excited by the air.

The effect of particular weather on animals was known to the ancients,—Virgil aptly alludes to the influence of unhealthy air on animals, though they were not subject to the general causes of human diseases, namely, wine, gluttony, and mental anxiety.

> ———Atqui non Massica Bacchi
> Munera, non illis epulae nocuere repostae,
> Frondibus et victu pascuntur simplicis herbae
> Pocula sunt fontes liquidi atque exercita cursu
> Flumina, nec somnos abrumpit cura salubres*.

There are many other instances on record of epidemic distempers among animals, which have prevailed only for a time, and which seem to be referrible to the atmosphere. A few years ago, in Essex, prevailed a mortality among cats, which carried off considerable numbers.

---

* Virg. Geor. lib. iii. 530.

And the well known history of the cats who died of parotitis felina, about Haywood, in Staffordshire, including the whole of a fine breed of Persian cats, is related by Dr. Darwin, in his Zoonomia. The mange is said to be contagious; but if this be the case, it is one of those disorders which, arising from unknown causes in a great many animals at once, may be afterwards propagated by contagion. The same mode of reasoning seems applicable to the glanders of horses, and to many distempers of cattle. Many symptoms of disease in animals are immediately traceable to the state of the atmosphere. Before rain, and particularly before great falls of snow in winter, do we find dogs particularly dull: their ears become inflamed, and they lay drowsily before the fire all day, and can hardly be roused. Swine seem uneasy in windy weather, and show symptoms of restlessness even before the wind begins to blow, by running about and squeaking, with a peculiar tossing up of the head. Hence the popular notion, that pigs can foresee the wind. To state at length all the various modes by which animals show their sensibility to atmospheric changes, would fill a large volume; suffice it to say, finally, that some of the most accurate prognostications of the coming weather are made from the observance of animals. These indications are well known to the husbandmen of all countries. I have collected a great many in my work on Atmospheric Phaenomena, which are popular in our country, and I have collated these with the remarks of the old Greek and Roman writers, in Notes to the Diosemeia of Aratus, printed in the Classical Journal, and in my edition of Aratus.

How far electricity may be concerned in this atmospherical influence, is it difficult at present to say: but the discoveries which philosophers are daily making, relative to the extensive operation of this fluid, (for such I must call it, till a better name be found,) seem to encourage a suspicion, that its agency may be concerned in producing every change in the atmosphere.

⁂

SECTION III.

PECULIARITIES OF THE ATMOSPHERE AFFECT THE LIFE OF PLANTS.

THE plants appear to be affected by peculiarities of the atmosphere, which do not consist in its degree of temperature or pressure. In the summer of 1810, almost all the planetrees, with the rough bark or rind, (platanus occidentalis,) became diseased in the neighbourhood of London, and for many miles round; very few of which, in comparison with the whole number decayed, recovered so far as to throw forth buds the ensuing spring, while the smoothrined planetrees, (palatanus orientalis,) and sycamore trees, (acer pseudoplatanus,) remained healthy. The same fact was noticed also in distant parts of the country, in Ireland, in Scotland, and even in countries still more remote from our own. The season was not either remarkably hot nor very unusually dry; but there were all those circumstances alluded to in a preceding section as denoting an unusual state of the atmospheric electricity. The succeeding summer, that is, in 1811, some of the same species of planetrees were again diseased, and a few died. I am informed, that some years ago a similar, though not so extensive a mortality, prevailed among the smooth-rined planetrees. From hence would it appear, that there were particular states of atmosphere which become specific stimuli to diseased actions of particular plants. Abundant proof of the fact, that certain seasons destroy particular tribes of plants, may be collected from various gardeners and nurserymen.

There are many other facts, which it would be useless to detail, that illustrate the proposition, that there are other peculiarities of atmosphere, besides heat, cold, damp, etc. which affect the functions, and destroy the life, of vegetables. This subject, however, appears to have been overlooked by Wildenow and others, who have written on the diseases of plants.

⁂

SECTION IV.

THE ATMOSPHERICAL INFLUENCE SEEMS IN MANY CASES TO BE PERIODICAL.

We call phaenomena periodical which appears to take place at regular intervals of time, in contradistinction to those which seem to happen at uncertain times. We might, however, find, if we possessed a more extensive knowledge of nature, that every natural phaenomenon had its particular period, and that there were a constant revolution of these periods. But we must confine this term, within our present limited views, to periods which revolve sufficiently often in the term of human life to enable us to measure and compare the intervals between the occurrence of phaenomena. Even in this sense, can I assert, that the influence of the atmosphere on the health and illness of man, is in many cases periodical. Previous to the more minute discussion of this question, may I observe, that different states of the atmosphere, exercising their peculiar influence, may have longer or shorter periods; and the diseases caused at these periods may follow so rapidly on each other, and at such different intervals, arising from the divers terms of the periods, that we may overlook the regularity of their occurrence; the different states, too, of the human body, by varying, or altogether resisting, the influence of the period, may mislead us with respect to its existence.

With these forewarnings of the difficulty of the inquiry, shall I proceed to investigate particular periods of disease, after showing that their periodicity is conformable to the general appearance of Nature.

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SECTION V.

NATURE EXHIBITS HERSELF IN PERIODICAL PHAENOMENA.

Doctor Spurzheim, of Vienna, was the first person who, during the time we travelled together, called my attention to the periodicity of Nature. I had long before noticed the influence of the various states of the air on the health; but I was unaware that such conditions of the atmosphere had periods within the span of human life. He observed to me one period which excited a phaenomenon of very general operation, — that for one or two days, and at the interval of twentyseven, most persons, without any ostensible cause, and without any particular complaint, felt themselves irritable, and in other respects indisposed for intellectual exertion. He noticed, too, a remark of Dr. Gall on other phaenomena, which occured at this period, and which, for obvious reasons, I have written in a note at the end of this paper.

He assured me of the real existence of this period, and that very irritable persons experienced a certain irritability at the half distance of time between two such periods. This remark roused my attention to the subject of periodicity in general. I observed that it was in this manner that the great phaenomena of Nature were wont to unfold themselves.

The round of the seasons was one striking example; the revival of Nature in spring, its maturation in summer, the fall of the leaf, and the general decay of autumn, and the winters gloomy picture of suspended life, are monuments of periodicity. Time alone appears to me not to be the cause of the phaenomena of the seasons, but something which takes place at particular times. The place of our globe with respect to the sun, the grand mover of the seasons, may also produce some other secondary agent in the atmosphere, wherein may reside the periodical power exerted over the surface of the earth.

On the change of seasons depend many other phaenomena. Atmospherical changes take place; plants grow, bloom, seed, and fade away. Different parts of the cerebral organization of animals become active; and the instincts to pair, to nurse the progeny, to build nests, and to migrate, are roused into action. But the weather of the seasons varies as to time, and with it the times of the other phaenomena. These varieties of the seasons may have periods, though too distant asunder to be noticed by man. Every thing we deem unseasonable or casual, such as cold summers, wet springs, or warm winters, may happen again and again at periods wide apart in the lapse of ages. The word season is, in our language, distinguished from weather, to denote the periodical from the casual changes of the air. But all changes would probably appear periodical, could we contemplate them through ages past and to come. To every animal a certain span of existence in the world is allotted; but in numerous individuals is this time shortened by casualties. So is it with all Nature. All appears to us regularity disturbed by casualty. But all would appear regularity to a being capable of comprehending the whole moving in harmony.

I have alluded to the general periodicity of Nature. I shall now proceed to infer the periodicity of the influence of the atmosphere on health, from those cases wherein it takes place in periods which fall within the limits of human observation.

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SECTION VI.

THE PERIODS OF MANY DISEASES ARE ACKNOWLEDGED.

THERE are many forms of disease, which from frequently occurring from time to time with great similarity, become known and designated by particular names; as the contagious complaints, measles, fevers, &c. Although should never confound symptoms with the diseased diathesis, or peculiar morbid state of the nervous system which occasions them, yet the designation of any set of consecutive symptoms by one name, helps us in the communication of knowledge. In those forms called aguish, the quartan, tertian fevers, &c., there is a regular periodicity observed; but in this case the one alternating state of the patient seems the offspring of the other. Consequently this is an example of periodicity as simply dependent on time, as any we know of. Moreover, when the disease has once began, seem these periods no longer to be caused by the external influence of the atmosphere. But still the disease itself, or that condition of body which is necessary to the symptoms, may have been first excited by the air on a constitution predisposed thereto.

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SECTION VII.

THERE IS A DIURNAL PERIODICITY.

THERE are many remarkable and well-known cases of the exacerbations of disease returning at particular times of the day, or at stated hours of the night. Dr. Darwin has related several curious cases in his Zoonomia, in which the fits of some diseases have returned, for a long time together, at the same hour. In one case clocks were altered with a view to deceive the patient as to the real time, under an idea that the periodicity of his complaints was the effect of fancy: but it proved to be otherwise; for he awoke in the night, and looking at the clock, expressed his astonishment that his pulse should begin to beat irregularly, an hour before the usual time.

In most diseases may we notice a

diurnal periodicity, besides the usual period or term of duration of the complaint. There are many kinds of headachs, for example, which happen at stated times of the day. I know a gentleman, who, for upwards of twenty years past, has been sensible of some particular influence on his nervous system twice in the course of every revolution of the earth. He gets up in the morning apparently well, but a short time before noon begins to feel symptoms of headach, with feverishness and languor: the symptoms increase till about two o'clock, and then they subside by degrees, and are too slight to be perceived by five or six. When they are very bad, he has generally a return of the complaint towards midnight. In proportion to his general health, are these symptoms worse or better; but under no circumstances is he insensible to the time of day, by his feelings. He has experienced the complaint uniformly at those hours, both when toiling in business in London, and when travelling in the country, in the habit of the healthy exercise of his body in the open air. He has not the organization of mind, nor does he bear the character, of a fanciful man. And I have frequently observed the effect of the complaint on him, at the time, producing a state of periodical languor and incapacity. I have neglected hitherto to observe whether or no those days in which he is worst, occur at the aforementioned periodical irritability; but I think this probable. He has seldom or ever any other complaint, lives temperately, and takes constant exercise. He is a philosophical man, and a great observer of Nature. But he is so convinced of some diurnal influence, that he has often told me he felt it difficult to believe that people in general did not feel it.

We have reason, no doubt, to think

that there are various original idiosyncrasies or peculiar kinds of constitutions, wherein different stimuli act with peculiar effect; but still the exciting cause must exist, though its operation be not always the same. In the case alluded to above, may there be perhaps a particular sensibility to some diurnal influence, which does not generally operate with so much effect on the human constitution.

That there is a diurnal influence, can we learn from the observance of many vegetable phaenomena: it may perhaps be the same cause which acts on some human beings. Flowers in general open by the exposure to the sun; but others open and shut at particular hours of the day, even if the sun remain unclouded, as the purple goatsbeard, *(tragopogon porrifolium,)* and the meadow geissbart, *(tragopogon pratense,)* which shut up their flowers at noon.

The regular periods of some flowers, like those of diseases, are interrupted by the condition of the atmosphere. Even when the sun is shining at their usual time for opening, do some keep their flowers shut, if rain be impending; hence they become prognostics of weather. This is said of the pimpernel.

There is a great analogy between the phaenomena of plants and those of animals and of man, resulting probably from an atmospheric influence exercised on both: and vegetable pathology serves to illustrate human. In the present instance, can we only compare a certain periodical influence on flowers, with its effects on a few peculiar constitutions. The above described flowers shut, and the aformentioned daily disease begins, at that very time, when, from the culmination of the sun, the least effect could be produced in a given time from his variation of altitude, namely, noon. The effects, therefore, cannot be referred to the direct influence of his rays; but may depend on some concomitant diurnal changes of atmosphere, liable to interruption from occasional disturbing forces.

The worst of these interesting investigations is the obscurity which overhangs them. The known instruments of meteorology do not demonstrate these periodical changes. We seem to be groping in the dark after their causes. We must, however, collect, and accurately compare their effects; not omitting, at the same time, the observance of the daily variation of the magnetic needle, and of the atmospherical electrometer.

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SECTION VIII.

THE ATMOSPHERICAL INFLUENCE IS OVERLOOKED, FROM ITS OBSCURE MANNER OF OPERATION ON THE NERVOUS SYSTEM.

ALL the phaenomena of the animal machine, the various functions of automatic life, of sensation, &c. depend ultimately on the nervous system. So do the diseases. No error is more common, or more dangerous to right practice, than that of confounding the various symptoms of disease with the morbid state of, or influence on, the nervous system, wherein the real disease consists. Cancer, for instance, may be regarded as the consequence of a morbid diathesis. The various symptoms of headach, vertigo, cutaneous eruptions, and local diseases in general, mark a disordered state of the nervous system, and of the digestive organs. By curing the latter by medicines and diet, and the former by exercise, do the symptoms subside. The question is, How far is the influence of atmospherical causes periodical with respect to the peculiarities of the symptoms? I have noticed, and firmly believe, that there are periods of general irritability, and that at these periods those symptoms may be excited, to which, from other causes, the body be foreinclined. But I cannot discover that the peculiarities of atmosphere, which seem to vary the symptoms, like the local influence noted in the second section, has any regular periods observable in the term of human life; we may regard it, therefore, as casual. Still, even in epidemical diseases of this sort, the daily and monthly periodicity is not to be overlooked.

This peculiar influence on our bodies from without acts in an obscure manner: because not consisting in the degree of heat, moistness, way of the wind, &c.,

we do not immediately feel its presence. The electrical state of the atmosphere seems more connected with the cause of the periodicity than the coldness or drought. Registers of the different atmospherical electroscopes should be constantly made, and kept with a view of ascertaining this point. By one which I kept have I found the unhealthy periods to be attended by a perpetual changing and unevenness in the action of the electricity of the air on the instrument which I employed to point it out.

Another observation, of Dr. Gall, must be repeated here, while I am speaking of diseases, from its importance in practice, namely, that we must, in cases of disordered functions, always distinguish between the suppression, as that arising from overloaded vessels, constipated bowels, external influence of the air on perspiration, &c. &c.—and the exhaustion, such, for instance, as results from the constant use of stimulating liquors, violent evacuations, &c. Likewise is the state of fatigue, in the most simple kind of disorder of functions, to be carefully distinguished from the two sources of disordered functions mentioned above*.

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* Philosophisch Medicinische Untersuchungen über Natur und Kunst im gesunden und kranken Zustand. — Von Gall, *Wien* 1791.

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SECTION IX.

THE MONTHLY PERIODS OF IRRITABILITY HAVE AN INFLUENCE ON THE MOST IMPORTANT FUNCTIONS OF ANIMAL BEING.

THE monthly and halfmonthly periods of irritability were first noticed in Germany. I doubted for a long time of their existence in reality; but observation afterwards convinced me of the truth of the observations. Dr. Gall observed, that once in twentyseven or eight days, was a period of irritability observed in most people. He found, by questioning many persons, that the cause operated very generally, that people at that time got up in the morning with uncomfortable ſeelings, but they knew no particular cause of them. These, in persons of very irritable habits, lasted several days; in others, only one: in some were they hardly perceivable. Some persons feel this twice in the month; others, I believe, oftener. Dr. Gall thinks he has noticed more quarrels, duels, suicides, and all those things which result from irritable feelings, or despondency, to be more frequent at that time. The influence alluded to acts, according to him, with greater force at some times than at others, and often in particular places; so that a great multiplicity of phaenomena, which result therefrom, are sometimes noticed in a particular tract of country. For example, a great number of suicides, during a short period, once occurred at Vienna, where that crime is in general very rare.

Persons afflicted with chronic melancholy are worse at this time. And in general at this period are the symptoms of mania more violent.

The aggravation of symptoms in madness, at particular periods of the moon, has long been believed, and hence the term lunacy. But the real periods do not correspond with any particular time of the moon. The term is therefore deceitful, and should be forgotten in pathology. There is, however, a periodical influence on insane persons at the times of the general periodicity; and, in some cases, at other times. Ascribing it to the moon is one among the many remains of astrology, which may be a science originally founded on some observations of periodicity, misunderstood by future generations, and worked up by idealish fancy into a whimsical system of stellar influences. The ancients were accurate observers; they knew, perhaps, of a monthly periodical influence on the body; they knew, at the same time, that the moon was a monthly phaenomenon; they noticed the accidental concurrence of certain periods of disease with celestial phaenomena; and they contemplated with wonder the power of numerical calculus, as a source of knowledge of future events in the heavens. Hence they might be induced to infer one phaenomenon from another, from a too casual or hasty observance of their coincidence. The learned, too, particularly the priests, always laboured to keep the mass of the people in ignorance and superstition. If we contemplate their causes, and reflect also how prone we are to abuse the natural instincts of hope, and mysterizingness, then shall we not be surprised at the credulity of mankind. But we must never turn away, disgusted with superstition, from the investigation of truth; nor absolutely deny that the periodical phaenomena may have causes beyond our globe and its atmosphere, merely because such a belief has been abused.

It appears that some practical results may be deduced from the knowledge of periodicity. Persons of irritable habits should, at this time, abstain from wine, irritating food, and from all moral causes of excitement, and should spend their time in the open air, in exercise and in cheerful society.

Dr. Gall has observed, that parturition, and female complaints, take place usually at the monthly period of irritability. Of this have I as yet not sufficient proof, to pronounce any opinion. He observes, too, that in particular years more males are born; in others, more females; as if there were general causes for the determination of the sex, which had what I call casual, or perhaps alternative, periods of prevalence.

It has often occurred to me—What causes old persons, decaying away with age, to die at last? If it were merely time, it seems that their death would be still more slowly performed. Some external cause seems to operate faster at the end. The natural close of mortal life is the last thing of all, in Nature, which ought to be regarded as painful. People fear it, from the absurd impressions made by weak instructors on their minds when young and susceptible, and which, like all infantine associations, have a tendency to come back to view with great force in old age. But though death is naturally slow, it would be almost infinitely protracted, if something did not put an end to the life at last. Finally, I believe that the life of persons lingering of age, or of many chronic diseases, is finished by some external influence during the periods of irritability.

These subjects are as yet obscure; so is all science in its infancy. They are often confounded with absurd hypotheses; so are all subjects of human observance and comparison, since all our faculties may be abused. Let us not be disheartened by any idle objections of this sort; but let us rather try, by constantly observing and comparing phaenomena, to arrive slowly at the knowledge of their causes.

SECTION X.

ANIMALS EMPLOY VARIOUS REMEDIES AGAINST THE EFFECTS OF ATMOSPHERIC INFLUENCES.

WHETHER by instinct, by the agency of particular organs in the brain, or by what cause, I do not pretend to know; but animals have, in common with man, found out and adopted certain remedies against diseases, when they begin to feel themselves influenced by the state of the atmosphere. Dogs may be observed before rain to eat grass, particularly the *agrostis canina,* in order to relieve the stomach from uneasy feelings by vomiting. Cats have the same habit. Many other instances of this kind might be brought forward of the remedies employed by animals against the effects of atmospherical influence. Man, therefore, *a fortiori,* of his superior complication of intellectual powers, should be able to do this more perfectly.

SECTION XI.

WE CAN ADOPT REMEDIES AGAINST ATMOSPHERIC COMPLAINTS, PARTICULARLY THOSE WHICH HAVE PERIODS: HENCE THE KNOWLEDGE OF THEM BECOMES USEFUL.

THE constant recurrence in England of the question, cui bono? and the dislike which prevails against any opinions apparently theoretical, from their uselessness in practice, renders the publication of natural knowledge of less general interest in this country than in many others, unless practical results can be derived therefrom. The Germans and the Scotch have considerably more curiosity about the various branches of knowledge for its own sake. But the English, with a few exceptions, prefer that wherefrom they can derive immediate advantage. The history of atmospherical periods, and their influence on the body, is of the latter kind, and merits the attention of philosophers in all countries. For, by a foreknowledge of these, we may not only prepare to mitigate the symptoms, but may be better enabled to judge at what stage of the disease the curative proceeding should be begun; since we may err in the time of commencing those salutary methods of cure, which, in order to take most effect, should be instituted at a particular stage of some diseases. This is perhaps at present a very obscure part of medical knowledge: but since the publication of Spurzheim's Works, particularly that on insanity, have medical persons in this country become more attentive to the periodicity of diseases, particularly those of the brain.

It has been found that a disordered state of the digestive organs accompanies nervous diseases; and I have before alluded to the excellent illustration of the connexion between the state of the health in general, and that of the chylopoetic organs in particular, published by Mr. Abernethy. But, as he observes, the disorder does not always begin in the digestive organs; it commences sometimes in the nervous system. This I believe to be often, if not generally, the case with those diseases which have particular periods of their own, independent of the monthly periods of general irritability. What we called moral causes operating on the mind, atmospherical influence, and constitutional and hereditary disposition, produce disease at first in the brain, and the digestion and the secretion of bile are deranged by sympathy. With good air and exercise, and the excitement of pleasurable feelings if possible, from the action of the antagonist organs of the brain, should we combine remedies which act on the digestive organs, in cases of periodical and casual diseases of the brain. And there is no doubt but that the attention to the functions of these organs is of the greatest importance: but what I believe to be also essential, is, that we should time these curative methods.

It is true that hypochondriacal feelings amounting almost to insanity, have been cured by 5 gr. pil. hydrarg. in the short space of one night: but I suspect in this case the disease was on the decline, and the cure was hastened by the timely effects of the mercury. I believe, however, that the functions of the liver may be apparently restored, and digestion may go on tolerably well in many diseases, and yet the nervous symptoms remain. I think, too, that diseases which seem doomed to run through a certain term, are often made worse by the untimely employment of the same remedies which, if given after the symptoms had passed the period of their greatest exacerbation, would have become highly useful in hastening the cure. I think it right to mention here, that I was unaware of this fact till it was suggested in my mind by some very recent observations on the brain. Formerly, observing the use of mercury in some cases, have I recommended it at an untimely stage of the disorder, and I have been surprised to find it did not take effect till after a certain periodical crisis, which the complaint passed.

Finally: diseases of the brain which may be brought on by accidental causes, as melancholy, which supervenes on continued or violent agitation and anxiety of mind; fevers, delirium, and other complaints, evidently originating in violence done to the brain by moral and physical causes, acquire a certain periodicity, have a natural term of duration; they are moreover influenced by the peculiarities of the atmosphere, and are exacerbated at the monthly periods. I differ, however, from Drs. Spurzheim and Gall in this, that I do not find the monthly periods to be perceived by all healthy people; nor are they, in my opinion, quite so regular as to the times of their occurrence.

Of the mode of this periodical action of the atmosphere, or of some other unknown cause, will I say nothing at present, since hypothetical opinions only bewilder the philosophical arrangement of facts at the beginning of inquiry.

BIBLIOTHECA BODLEIANA

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SECTION XII.

INSANITY HAS ITS PERIODS, AND THE KNOWLEDGE OF THESE BECOMES IMPORTANT TO THE CURE.

I HAVE already stated my opinion, that during what Dr. Spurzheim calls the periods of irritability, insanity, particularly the melancholic kind, has its exacerbations. The knowledge of these periods is therefore of the greatest importance, since the curative proceeding may often be began with most effect just after the period be passed. In some cases the patient can be prepared against it by medicine. At all events, it should be known, if possible, beforehand. The periods of irritability do not happen precisely on the same day to all persons. In twentyeight days are there two periods; and Gall has classed patients according as they are affected at one or the other, particularly females. Some persons are affected at both the periods. A few observations on any particular patient, will enable us to discover the periods and manner of being affected, which belong to his particular constitution. Besides the abovementioned, are two other periodicities to be noticed in insanity: one is a diurnal period; some mad patients being worse at noon, in the morning, at night, &c. &c. Another, may be called the long period or span of the disease. For, though mad persons have maniacal exacerbations of the disease at the daily and monthly periods, yet is there a certain term, or course, which insanity, like other diseases, often runs through, and which should be accurately studied. I shall call this long period the term of the attack of mania. It is of longer or shorter duration in different cases: in some, is it continuous through many monthly periods of exacerbation. Towards the end of the term, happens it frequently that the delusive ideas are only felt during the few days of the monthly period; or are at that time recollected only in dreams. Finally, the terms of insanity are liable to return at very distant periods of time, sometimes annually.

The circumstance of dreams leads me to notice a phaenomenon, which has been mentioned to me, by melancholic patients, who have recovered of several terms of hypochondriasis.—When the disease first began, they became sensible of a peculiar fixed sentiment of fear and anxiety, which they could readily distinguish from the most violent effect of grief and fear from common external moral causes, and they knew it to be morbid. At periods, as the disease advanced, did they regard the hallucinations as real objects of terror; but as the term of the disease came towards an end, they lost this belief, and became conscious again of the diseased state of the feelings even at the periods of exacerbation: the disease at length subsided; but the patients at the time of the periodical irritability had hypochondriacal dreams, attended with peculiar fears, and they awoke rejoiced to find the hypochondriasis was really gone, and had only then been dreamt of. It will be found, that persons with the brain greatly developed under the middle of the parietal bone, are most liable to this kind of insanity.

Finally, as insanity is a diseased action of the organs of the brain, so must it be modified according to their comparative magnitude. I do not describe various symptoms here, as Dr. Spurzheim has treated of this disease at length, in his recent work. But the periods of insanity (of the real existence of which, actual observation has convinced me,) are of so much importance in the cure, that I shall be excused for this imperfect attempt to call them into more general notice.

SECTION XIII.

CERTAIN SUICIDES ARE PERIODICAL, AND MAY BE PREVENTED.

SELFMURDER has ever been regarded as a crime; and it is right that it should be viewed in that light, when committed by persons in a sound state of mind, who, from want of fortitude to withstand the pressure of evil, put a voluntary end to their life. But suicide is frequently the consequence of a disordered state of the brain, and is committed by persons who have no external cause of uneasiness. In this case does it often happen during the periods of irritability before mentioned; and it must then be regarded as the effect of insanity. By medicines and particular moral treatment of persons who have this tendency, exhibited to them about the time of these periods, might the intentions of many often be diverted. Dr. Spurzheim has written some useful remarks on this subject in his late book on insanity, which all who have the care of unfortunate persons of this description should read.

In order to ascertain where suicide results from a disordered state of the brain, must we examine various cases, and the circumstances under which they have occurred, together with the natural character of the individual. Persons who have much natural timidity, with ideality, and a romantic disposition and also destructiveness, are more liable to this disease than others in whom these feelings are weaker. As in madness of the more determined kind, so also in suicide from insane feelings, must we examine not only the disordered state of the brain and nerves, but their kind of organization, since on the latter depends the varieties of the symptoms. I shall illustrate these opinions by a few cases, and shall select those which have not been published before in the recent works on insanity.

A patient complained for a long time of lowness of spirits and fear, but could assign no object of his terrors. He reasoned with himself for a long time against this feeling, but at length gave way to it, became melancholy, and put an end to his life by hanging. This is a simple case of the morbid activity of a particular organization, without an external cause even imagined.

Another person got into a low state of health from disorder of the digestive organs, attended with want of bile, which at length affected the brain: he had periods of exacerbation, during one of which he declared he should be ruined by bills which were coming in, though all his comrades knew he owed very little. He walked quietly up stairs in one of these fits, and hung himself. Such persons, had the periods been foreknown, might have been prevented from doing the act.

The choice of a peculiar mode of death, which some persons have, shows also the physical nature of the propensity, since we must ascribe it to the peculiar and modified activity of a disordered brain.—Of the following case have I been assured, on good authority.

A child was in the habit of playing in a garden, from whence it frequently ran into the house, and said, a voice always called it to the water, but it dared not to go. It repeated this story frequently, saying, the voice always called it; it must, and would go. The child was one day found drowned in the same water.

There are persons, who feel a great propensity to end their existence by water, fire, &c., and even by means more whimsical, and who reason against what they at first call such nonsensical feelings, but who at length contrive their death by such means. Some of these persons know themselves sufficiently, never to trust themselves in particular situations, at the periods when they are irritable*.

I know a person who refused to ascend with me a dangerous precipice, saying, that at that period he could not trust himself, on account of a propensity, which he had had from his boyhood, to throw himself down from high places. He would have willingly gone in a few days' time without fear. Several persons have spoken of this mad propensity to throw themselves down from heights, but who retain sufficient command of themselves never to do it. It is probable that in many suicides, from moral causes, in which the individuals have chosen this dreadful mode of death, they have been directed by some internal propensity; since some have taken trouble to kill themselves in this particular manner, when easier methods offered themselves.—Others have felt, at times, an almost resistless inclination to throw themselves into great waterfalls, for which they could not account; as no other sort of death seemed pleasant to them. I could relate numerous other cases of persons who have confidently assured me, that at periods of irritability they have felt the most violent desire to die by particular means. I forego the narration of them, because they seem almost incredible, and the relation of them could do no good to the illustration of physiology. I notice them merely to excite the attention of those who, from their professional situations, have more extensive opportunities of observing and conversing with the insane. In Germany many cases of this kind have been commemorated. Indeed, in nations where ideality prevails must the fanciful character of the feelings be more developed, and those infinite shades and modifications of sentimentality and error of mind be observed, which, when persons of this kind go mad, must give a peculiar character to their symptoms. Very curious cases are on record; but it is of less importance to enumerate the particulars of these, than it is to excite the attention of medical men to the degree in which the disorders themselves may be periodical*.

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* Foeminarum catamenia etiam occurrunt in hisce temporibus quae Gall periodica dixit. Tum, insanis accedunt symptomata violentiora.

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* Since the publication of Mr. Abernethy's Works, and the consequent improvement of medical practice, several persons have positively asserted that nervous diseases never occur while the digestive organs can be kept in order. This I believe to be generally true; but it is true also, that during the periods of irritability it is often impossible, by medicines, to regulate the stomach and bowels. Hence, at these times, we fail in the most essential means of cure.

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SECTION XIV.

Although I have determined not to enter into any hypothetical explanation of the manner in which the periodical influence on the brain and nervous system be exerted; nevertheless, there are several considerations respecting the structure and functions of these organs which should be examined and kept collaterally in view, as they may lead to the discovery of many curious phaenomena at present unknown. One principal circumstance to which I allude, is the duplicity of parts throughout the whole nervous system. The Organs of the Brain are double, there being two corresponding hemispheres; at the same time that consciousness is single. Hence arises a question,—Whether the two hemispheres act contemporaneously, or alternately? There are facts which seem to favour the notion, that both act together, while other facts would incline us to believe their action to be single and alternative: among the latter may be mentioned several circumstances which attend periodical irritability.

I shall omit the modes of reasoning adopted by former writers, and shall proceed to discuss this question on the strength of experiment alone. I must, however, observe previously, that some persons have tried to explain this phaenomenon by the uniting of the parts in the commissures of the brain; others by the Organ of Individuality. These notions appear to me, however, to be vague and inconclusive. Whether the two sides of the brain act separately, or whether they act together; whether the commissures unite the action, or whether there be some as yet unknown arrangement of the cerebral fibres, whereby these are connected with the Organ of Individuality placed in the middle, I do not pretend to know; but granting either case, it is plain the mystery of animal life remains unexplained. Those who would account for Life and Mind by the structure of the organs of the brain, are just as absurd as the philosophers who thought they had explained vision by showing that the eye was a magicklantern, forgetting that if it were the completest Camera possible, there must be yet another percipient eye behind to see it! Just so is it with the brain. None of the cerebral arrangements can explain perception, which we may therefore continue to regard as a property of a Being essentially distinct from its organs, however necessary these may be to its various manifestations in the world. The consciousness of our own individual Being is quite different from the belief of the individual existence of external objects. It is a simple idea, like Time and Space, and cannot be defined*. Rejecting, then, the illfounded and fallacious arguments of materialists used to disprove the existence of the mind, shall I proceed to state some curious phaenomena connected with the functions of the brain, which tend to establish the alternating activeness of the twofold parts.

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* I introduce this observation merely to confute some common prejudices that have gone abroad respecting the tendency of the doctrine of Gall to

During the periods of irritability, which happen either once or twice at equal intervals in the course of twenty-eight days, may be constantly remarked in the brain an indisposition for intellectual exertion, and a more irritable state of the feelings than usual. Might not this be the case were this period the time when the active state of either hemisphere was changed? Might not the general irritableness of the body be the result or concomitant of this change of activity from one side to the other?

materialism. It consists simply of an arrangement of facts respecting the connexion found to exist between the particular character of the mind and the particular forms of the brain, and aspires not to any metaphysical knowledge of the first moving principle.

There are persons, who, being of very irritable habits, are conscious every time of these periods, and who find themselves more strong in intellectual power at one interval between two periods, than they do at another. Moreover, the interval of greater power is alternate with that in which the faculties of the mind are weaker.—May not this arise from the relative strength of the two hemispheres? The right side, for example, may be the strongest. Both hemispheres may be at all times in a state to act, when necessity requires, but one may be in a particularly active state, and may be used on all common occasions. The same observation may apply to the five external senses, and to the cerebellum, since all the parts are double.

I have observed another very curious phaenomenon with respect to the Organ of Vision. At monthly periods irritable patients have sometimes the following particular attack of disorder of the system in general, and of the front parts of the brain in particular. Soon after breakfast, or some other meal, they find suddenly their vision obscured, objects are in part unseen, and there seems a wavy motion in every thing: sometimes one eye is affected before the other; but whether this be the case or not, by shutting one of the eyes, can the patient generally see more distinctly with the other alone than he can with both open together. This partial blindness lasts less than an hour, and is succeeded by a headach in the frontal parts, accompanied by fever, nausea, and disturbed functions of the digestive organs, after which the whole goes off. Persons have mitigated the attack by medicines, but they cannot always keep it away. It has been attributed to indigestion; but though it may begin with indigested food, yet something peculiar must have previously disqualified the stomach for digesting, and the disease is generally periodical. The Organs of Vision constitute a very particular apparatus, and have great connexion with the brain. The supposed decussation of the optical nerves is close to the brain. When the frontal parts of the brain have been called into too much action about the time of these periods, then are the abovementioned symptoms more violent. In some persons, does this, like other diseases, wear out by degrees. There is always a dulness of thoughts and feelings before, and a hurried action of the brain after, these attacks.—Cannot this be an attendant on a too sudden change of the active state of the two hemispheres? That one eye is used in a manner somewhat different from the other, may be inferred from the well known experiment of putting the finger into a ring with one eye shut. Do these funçtions alternate?

The periods of irritability are of longer or shorter duration, according to circumstances; sometimes they last three days, generally two, and always one. A very irritable state of the nervous system, which may have lasted a long while, is sometimes ended at one of these periods, by a violent attack of the above kind; or, in other patients, by epilepsy, or by other nervous complaints, to which they may be predisposed. May not one hemisphere be in a more irritable state than the other; so that the patient be relieved, when, after the effort made at the period of change, the action devolves on the opposite side?

I do not mean to infer that the effect of the period is merely the change in the activeness of hemispheres; but this may be one phaenomenon, among a great many others which take place at these periods of general irritability.

There are yet other facts, which incline me to believe in the alternative action of the double parts. Persons who are only half mad, or who have particular maniacal hallucinations, have said that they feel the insane idea on one side, and have, at the same time, judged of its untrueness with the other. In many of these persons the sound state of mind is alternate with that in which the erroneous ideas are believed by the patient, and mistaken for reality. I could advert to too many cases of this kind, to doubt of there being some particular cause for the opinion on the part of the patients, that they can think with one hemisphere alone. Dr. Gall has mentioned instances, even among his friends, of persons who assert that they can only think well with one side. One hemisphere has been found to be bigger than the other in some of these cases. That one side can act alone, have we often had proof; for one side has been destroyed by accidents, or by disease, while the other has continued to perform its functions.

The observations which I have advanced above, respecting the change of action in the brain, have rather been put down to excite future inquiry, than for any other reason. This subject is involved in deep obscurity.

With the same view, have I endeavoured, in the hasty composition of these sheets, to illustrate my opinion respecting the external influence of the air, and its periods, by a very few cases selected for that purpose, while I have before me numerous others of a similar kind, on which these opinions have been founded, the detail whereof would be irksome to the reader. I have left out, for the aforementioned reasons, any hypothetical opinions about the cause and manner of operation of this atmospherical influence.

It is right to mention, lastly, that the knowledge of some periodicity in diseases has been long known, though all writers, before the time of Gall, have overlooked the very general operation of the monthly periods. Dr. Darwin stated his opinion, that the cause was to be ascribed to solar and lunar influence, and instanced the exacerbation of fevers, and other symptoms of illness, about six o'clock in the evening, the periodic cough, &c. &c., in proof of his opinion. He thought likewise, that the diseases which begin with torpor, and end in pain, as headach, &c. often begin about six hours after noon, or midnight*.

The same author has also noticed the occurrence of the catamenia at lunar periods. He likewise remarks the effect of the moon on hydrophobia, and on diseases of other animals, which I do not repeat, as they are already in print.

Without entering into his train of reasoning on this subject, I may observe, that the moon is particularly connected with the changes of the atmosphere, as well as with those of the tides; hence she may have a share in producing other aërial causes which influence terrestrial bodies. In consequence of observing these circumstances, have accurate meteorologists of late divided their weather-journals into lunar periods, and they have already found the mean state of barometrical pressure to attend the first and last quarters, while its extremes accompany the new and full of the moon.

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* See Zoonomia, Class IV. ii. 4. and Section xxxii. vi. and xxxvi. iii. 9. where the author has related the monthly and daily periods of erysepelas, haemorrhoids, gout, headach, fevers, and many other complaints.

But the monthly Periods of Irritability do not correspond exactly with the lunar periods, consequently there is a precession and retrocession of them, with respect to the moon's place in the heavens. A sufficient number of observations, however, have not as yet been made, to determine the relation between the moon and this phaenomenon, which, with many other at present hidden and mysterious laws of Nature, the repeated observations of philosophers may unfold in time to come. In order to acquire a knowledge of this relation, we must pay particular attention to the electric state of the air, by making daily observations on the atmospherical electrometers, electrical kites, &c. I have constantly found a very great irregularity in the indications of these instruments during the time of epidemic complaints, and at the monthly periods of irritability.

APPENDIX.

The remarks of the foregoing pages are not altogether new, although they have not been much heeded by modern practitioners. Many treatises, both on the influence of the atmosphere, in cases of epidemic complaints, as well as on the periodical returns of symptoms, have been written and have fallen into oblivion. But I did not quote these in my pamphlet, since the most part of the above observations were made before I became acquainted with works on similar subjects, and at a time when I had no opportunity of recurrence to libraries. I have lately, by ransacking old collections of medical books, become acquainted with many treatises relating to the subject of these sheets unknown to me before; and of which I shall add some short account for the use of those readers who may wish, in following up this curious object of medical research, to be the better prepared for making future observations, by an acquaintance with those of persons who have gone before. Thus can one trace the knowledge of the casual and periodical influence of the atmosphere on the human body from the earliest remarks of the Greek and Arabian physicians, gathered from, or improved by, their acquaintance with the wisdom of the East, down to that important time when Dr. Gall first made the remark that there was a monthly general influence, which he called the period of irritability — a time which forms an important epoch in the history of anatomy and physiology, from the unfolding of facts about the structure and functions of the organs of the brain, whereon the true natural history of the human race must at length be founded.

Hippocrates, Areteus, and Galen, noticed the existence of some influence from without in epidemical diseases; and knew of some local influence in endemics, which the Roman physicians and philosophers confirmed, and which were alluded to by Lucretius and Virgil in passages already cited. After these, when literature and knowledge came to life again after the middle ages, appeared many treatises on periodicity and external influence, which I have sorted in the index according to the branches of the subject.

When it is considered, that not only the periods of diseases, but even the influence of the sun and moon in their production, were credited and written on by such persons as Hoffman, Sydenham, Meade, Darwin, and other physicians of celebrity, then should I be excused if I extend this subject a little farther; and should be exculpated from the charge of a fanciful theorist, even by those (and they form a numerous class in all countries,) who would rather rest their knowledge on authority, than be at the trouble to gain it by observation.

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◆

In order the further to prove the truth of the foregoing remarks, with respect to the casual and periodical influence of the atmosphere on diseases, have I recommended the plan of keeping journals of the weather, and noting down the epidemical and other prevalent complaints in collateral columns. The periods of irritability might likewise be noted, and also astronomical phaenomena. Such journals kept for a long time by physicians of extensive practice in different parts of the world, might lead to very useful results, by exhibiting a large body of collateral and consecutive observations on the atmosphere, and on diseases and their periods, by which we may be enabled to observe many coincidences at present unknown.

With a view to assist persons in composing journals, have I subjoined the following plan, with a short description of the modifications of the clouds; since the knowledge of these, considered as the indicators of the electric state of the atmosphere is of some importance to the speculative physician, who is examining the connexion between the health of his patients and the state of the weather.

The journal should consist of 16 columns. The 1st column should contain the day of the month, 2d the hour of observation, which ought to be made at least three times a day, if possible, viz. 9 o'clock in the morning, noon, and midnight. Those who are able to employ a person expressly to keep the register, should make five more observations, viz. at sunrise, being the coldest time, at 2 P. M., and at 2 in the morning, because the crisis of symptoms of diseases with daily periods often happens at these times; at 6 P. M., because there is likewise, in many cases, an exacerbation of symptoms about this time. Though I have observed this period to fluctuate, according to the hour of dinner, having been established, I believe, by the exertion of digestion, yet it afterwards goes on periodically, independent of eating. It is to be noted that 9 A. M., noon, and 6 P. M., are also barometrical periods. The 3d column should contain the barometer; an R or an F should be placed after the numerical denotation, to signify either *rising* (if the mercury have a convex surface), or *falling* (if with a concave top). This will lead us to a knowledge of the time when the maximum and minimum of the day happen. The 4th column, the thermometer. In particularly hot or cold weather the maximum of the day and the minimum of the night might be taken with a Six's, or selfmarking thermometer, in case we should not have seen it at its extreme points. This might be added in a note. The 5th column, the hygrometer: Saussure's and De Luc's are the best. The 6th column, the evaporation (by a vapourguage) in 24 hours, taken from 9 to 9 o'clock every morning. The 7th column, the rain fallen, (by a rainguage). The 8th column, the atmospherical electrometer. The 9th column, the electroscope of De Luc*. The 10th column, the direction of the wind (by a weathercock). 11th column, its force (by an anemometer). The 12th column, the modifications of clouds, or nepheological journal. They are as follow :—

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* For a description of these instruments and figures, and for descriptions of the modifications of the clouds—See my "Researches about Atmospheric Phaenomena," 2d edit. — Baldwin and Co. 1815.

1. *Cirrus,* or Curlcloud, a light flexuous or curling cloud generally observed in the higher regions of the air. Sometimes its fibres are straight, and cross the welkin from one horizon to the other.

2. The *Cumulus,* or Stackencloud, an aggregated mass of an irregularly hemispherical form. The common cloud of day.

3. The *Stratus,* or Fallcloud; fogs and mists.

4. The *Cirrocumulus,* or Sondercloud; a bed of separate orbicular aggregates.

5. The *Cirrostratus,* or Wanecloud ; a thick shallow cloud, a bed of little barred or streaked clouds, with this character. It is always in a subsiding state.

6. The *Cumulostratus,* or Twaincloud. The rock-like and mountainous clouds before storms.

7. The *Nimbus,* or Raincloud, immediately causing the *Imber* of shower of rain.

The 13th column should contain the general remarks on the weather. Occasional phaenomena, as halos, meteors, the calendar of Flora, &c. &c. The 14th column, the diseases in particular. 15th column, the periods of irritability; and the 16th column, the place of the moon.

Various miscellaneous notes might be added. As the appearance of migratory birds, the diseases of animals, &c. &c. These journals, kept in different places, and published collectively, like the Meteorological Register of the Palatine Society of Meteorology, would be useful and interesting.

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I hope to publish, before long, some Journals of the above kind; and likewise some Cases I have collated, illustrative of the foregoing observations. In the meantime I solicit the communication of Cases, in the Philosophical Magazine, or other Journals.

FINIS.

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OBSERVATIONS
ON
THE PHENOMENA OF
INSANITY.

BEING A
SUPPLEMENT
TO
OBSERVATIONS
ON THE
CASUAL AND PERIODICAL INFLUENCE
OF
PECULIAR STATES OF THE ATMOSPHERE
ON
HUMAN HEALTH AND DISEASE.

By **THOMAS FORSTER, F.L.S.**
Corresp. Mem. Acad. Nat. Sciences Philadelphia, &c. &c. &c.

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PREFACE

TO

OBSERVATIONS ON THE PHENOMENA OF INSANITY.

In a recent publication I have endeavoured to establish the following doctrine, — That there are peculiar states of the Atmosphere, independent of its temperature, weight, or moisture, which have a particular influence on human health and disease, as well as on other natural phenomena. This influence, depending on different states of the Atmosphere at different times, becomes various in its mode of operation: hence it not only causes a general disturbance of the health, but seems to have considerable share in producing the varieties of the symptoms. These peculiar conditions of the Atmosphere happen at times apparently very uncertain, and their influence is therefore denominated *casual.* It seems to be the cause of epidemic diseases.

That there is likewise, apparently independent of the above, a periodical influence, occurring twice in the course of twentyeight days, which has a very general operation: it affects immediately the Brain and Nervous System, causing a general increase of irritability of the whole body, and it lessens the capability and relish for intellectual exertion. — That its effect is greater or less in different persons, in proportion to the susceptibility and weakness of their constitutions. — That persons who are very irritable are liable to feel this influence at both the above periods, and it often lasts for several days; but strong and healthy individuals only feel it once in the month, and with them it is trifling, and of short duration. — That healthy persons who are affected at one time in the month, are not affected at the other: hence these times may be regarded as two distinct periods, each of which recurs once in about twentyeight days; and they are therefore called the Monthly Periods of Irritability. That at these periods the symptoms of all chronic complaints are exacerbated; and headach, epilepsy, catalepsy, and various nervous diseases to which there may be a predisposition, are most liable to happen. That the symptoms of various sorts of Insanity are worst about this time, but particularly the melancholic kind: hence suicides from disease are more numerous.—In females, the catamenia usually takes place at one or other of these two periods; and when irregular, sometimes occurs at both.—Parturition generally takes place at some one of these periods, and consequently abortions are then more to be apprehended than at other times in the month. Finally, wounds heal less readily, hydrophobia is more common, infectious diseases have crises, and all those phenomena occur which can be ascribed to increased irritability. The periods do not seem to coincide with any exact time of the moon, but their occurrence twice in a lunar revolution is a circumstance worthy of notice. I have also shown that there are Diurnal Periods of Diseases, some paroxysms occurring at stated hours, as at noon, two o'clock, six o'clock, midnight, &c. &c. That there are likewise periods of diseases which occur every second, third, or fourth day. Diseases which observe any of these Diurnal, Tertian, or Quartan Periods, have their worst paroxysms (at their accustomed hours) during the time of the Monthly Periods. That some diseases have particular Periods of their own, and Terms of Duration, which last many months, independent of the other periods. These disorders, as well as those before described as happening from the *Casual Influence,* are worse at the Monthly Periods.

That some diseases are frequently found to recur at nearly the same time of year for several succeeding years: hence there are Annual Periods of Diseases, which, while they last, are worse at the times of the monthly influence.

Finally, that in derangements of the mind, the periodical influence only causes an exacerbation of the paroxysms, while the peculiarities of the symptoms depend principally on the particular organization.

And I have shown that the periodicity of diseases is confirmed by collateral observation on animals and plants, and is conformable to all the phenomena of Nature,

I proceed here to endeavour to explain how Insanity in particular may become subject to the *periodical and casual Influence,* by inferring its physical nature from its Symptoms, and the striking analogy between this and other nervous diseases. The doctrine I have here tried to establish respecting madness may be thus comprehended.

Among the multiform diseases to which, from original predisposition, and the influence of numberless exciting causes, the human body is liable, may be reckoned Insanity; or derangement of the faculties of the mind, which depend on irritation of the organs of the brain, kept up by the reaction of a fulness and inflammation of its vessels, and more or less of a disordered state of the digestive organs.—That the particular symptoms in Insanity depend on the particular parts of the brain so affected.—That the violence of the symptoms is commensurate to the degree and kind of derangement in the animal machine, which may be clearly pointed out in its beginning, (before the mental symptoms occur,) as appearing usually in periodical paroxysms. And that the medical treatment which is most successful, must consist in rectifying the state of the digestive and other natural functions, and a course of lowering treatment by bleeding.—That all these circumstances, taken collectively, naturally induce us to place Insanity among other nervous diseases, from which it seems to differ in the particular locality of the diseased cerebral action. Future observations may confute, confirm, or modify, this view I have taken of the disease, which, for several years past, I have taken pains to inquire into, and which is an important object of research, from its increasing prevalence in civilized nations.

T. F.

Tunbridge Wells, September the 26th, 1817.

OBSERVATIONS, &c.

INSANITY cannot be accurately defined, because in its various modifications it borders too closely on other nervous diseases; and it exists in all degrees, from the least to the greatest state of cerebral derangement. But we are capable of adverting to several morbid symptoms, which seem to concur in almost all its modifications. The consideration of insanity may be divided into two parts: — the morbid symptoms of disorder in what are called the automatic functions of the animal machine; and the particular hallucination or kind of insanity. The former of these may be properly considered as the disease which is to be subjected to medical treatment; and it consists more or less in a too great determination of blood to the brain: the latter depends principally on the original structure and comparative magnitude of the different organs of the brain, or in their comparative activeness; and it is much under the influence of moral causes. On the former depends the existence of the disease; on the latter, the varieties in its modifications. The former may be called the disordered state of the automatic functions; the latter, that of the functions of animal life. Their division will be more fully illustrated by the subsequent detail of symptoms.

§ 2. In cases of madness, as in all those diseases called nervous, there appears a particular determination of blood to the head, producing, in many cases of insanity, a slow inflammatory action of the vessels of the brain and its coverings. This fact has of late been almost indisputably proved. It was first impressed on my mind by observing the greater degree of density, hardness, and weight, of the sculls of madmen; a circumstance which became known when the students of the physiology of the brain collected a great number of crania, particularly Gall and Spurzheim. I had in my possession a great many, which were dense like ivory, and differed materially in texture from the sculls of healthy persons. This hardness of the cranium is not near so great in persons subject to nervous diseases which produce less violent and less perverted cerebral action. It is conformable to acknowledged facts to ascribe it to continued inflammation.

The great determination of blood to the head in insanity, increased during its paroxysms, may be felt at the carotid and temporal arteries, as was frequently proved to me when I first attended to this disease. But the great disproportion between the pulsation of the radial artery and the carotid, which would lead directly to the knowledge of the particular determination of blood, seems most distinctly and accurately noticed in a small tract published by my friend, Dr. Thomas Mayo*. I have perceived this symptom wherever I have been permitted to examine patients during the paroxysm; but I passed it over, from finding it to occur in other nervous disorders.

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* This Tract, professedly founded on the long practice of Dr. Mayo, sen., is highly valuable from its perspicuity of diction, its exemption from hypothesis, and the importance of the treatment it recommends.

This fact of its being common in other disorders of the sensorium, shows that something more is yet necessary to produce the insane state of the brain. I believe this other thing to be referrible to the particular seat of the inflammatory action, which the determination of blood to the head either directly causes, or at least is closely connected with. And this view of the subject, corroborated by numerous facts, enables us in some measure to explain the modifications of the symptoms. In the present section I shall confine myself to the automatic functions, and to the medical treatment.

With respect, however, to the cause of the physical symptoms, there appears some obscurity: for though the cerebral inflammation be a prominent symptom, the cause of the determination of blood to this or that part of the brain remains, in many cases, unexplained. I consider it as the consequence of the too great activity of the cerebral organs, either the result of hereditary predisposition, or of violent excitement from strong emotions of the mind, or as resulting from the cooperation of these causes. According to this view of the phenomena, passions which call any particular part of the brain into violent action may not only favour the disordered state of the automatic functions, which may be necessary to insanity, but may also determine the particular hallucinations. This opinion might be fairly deduced from the doctrine of the plurality of organs in the brain, even were there not other circumstances which could confirm it.

If we carefully examine the ostensible symptoms of disease in insanity, we shall find them such as occur in most other nervous complaints. The hurried action of the vascular system, particularly in the pulsation of the carotid and of the temporal arteries, the determination of blood, as well as the insensibility of the stomach to stimuli, are found in numerous diseases in which the usual functions of the mind remain unimpaired. But a very similar treatment appears beneficial in all those diseases which are marked by the above phenomena; namely, alterative medicines and depletion: because in all, the principal object is to rectify the state of the digestive functions, and to diminish the inflammatory action of the vessels of the head: consequently, the clear elucidation of the fact, that insanity occurs where the inflammatory action affects the internal organic parts of the brain, and that it varies according as particular organs are affected, becomes more a subject of curious speculation, than of absolute medical utility; at least so far as respects the medical treatment. I shall proceed, however, in endeavouring to illustrate this fact, since it is closely connected with the consideration of the moral causes, and tends also to prove that the determination of blood to the head is only secondary in the chain of the physical causes of insanity, though it evidently reacts on, and perpetuates the primary cause, which is often diminished or wholly removed, when, after a course of lowering medical treatment, the determination of blood is lessened or destroyed. The same argument seems applicable to the disorder of the digestive organs, which reacts on the organs of the brain. Hence alterative medicines and bleeding become important; since cerebral inflammation, as well as the disordered bowels, would maintain the primary cause, which, by a reflected action, would mutually keep up the disorder in the vascular and digestive organs. The primary cause, or the too great activity of the brain, is, therefore, the real object to be removed. The disposition to it is connate and hereditary, and is brought on by moral causes which violently excite the brain, and by disorders which, beginning in the digestive or vascular systems, excite those of the cerebrum by sympathy: it is subject, like disorders of other parts, to casual and periodical paroxysms, depending on atmospherical influence; and it is often cured by the power of depletion to remove the secondary and exciting causes. It likewise sometimes ceases of itself when, by great changes in the atmosphere, some external irritant is apparently withdrawn.

The doctrine, that insanity is connected with cerebral inflammation, and that the kind of hallucinations vary according as particular organs of the brain become the seat of the affection, is confirmed by collateral observation on other nervous diseases. In all these there appears an evident increase of the quantity or momentum of blood in the head, subject to particular laws of distribution, whereby different parts become affected. Dr. Parry has ably illustrated this fact: and it begins to be a general doctrine among other distinguished writers on medicine. But the primary cause is apt to be overlooked, or confounded with the ostensible symptoms. The opinion maintained by M. Abernethy seems, to me at least, the most rational: for though in nervous diseases, and in those denominated local, there be a particular increase of vascular action, yet we must eventually refer this action to irritation, previously occurring in weak and susceptible parts. Moreover, when the nervous irritation occurs, from whatever cause, weakness of particular parts is not the only cause of their becoming the seat of the disease. There are atmospherical causes, which happen casually, and are insensible, that not only irritate generally, but which fix the particular symptoms, as well in the human subject as in animals*. This external influence is local in some regions; and on the knowledge thereof is founded the custom of prescribing particular places as medical agents in the cure of particular diseases, and of proscribing others as insalubrious. The eyes in one place, or at one time, are most affected; the ears at another; and so on. In these cases, the determination of blood must be referred to the recurrence of local or sympathetic irritation.

External causes of irritation produce similar effects, which are more transitory, because there be no permanent cause, acting by sympathetic influence: but when this external cause is violent, the inflammation produced reacts on the irritated nerves, and the disorder is protracted. I shall endeavour to show, in the sequel, that this is precisely the case with many kinds of insanity; that is, similar causes, acting on the cerebral organs, produce madness, which, when they occur in the nerves of the senses, produce erroneous or imperfect sensation, and in the other parts of the body cause local complaints. Reserving this application of the doctrine to insanity to another section, I shall proceed to enumerate some of the symptoms of several dissimilar nervous complaints.

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* A correct history of the plagues and epizooties which are recorded in history, compared with journals of the electroscope, would be highly interesting.

§ 3. Too much exertion of the eyes, independently of premature paralysis of the nervous apparatus, produces local inflammation in the circumjacent parts. But opthalmic diseases occur also from sympathetic and atmospherical influence: so also of other parts.

The auditory apparatus affords an example: violent sounds, like sudden glare of light to the eyes, cause inflammation of the organ. Deafness is frequently caused by an accumulation of blood, either producing obstruction in the Eustachian trumpet, or in some other part of the ear. It is sympathetic, is under the influence of the atmosphere, and is sometimes relieved by hæmorrhages. In epilepsy, violent affections of the mind bring on the attack; while it is sometimes referrible to the sympathy of the brain and nerves with the overloaded or irritated stomach; or is the result of the two causes acting together. I need not enumerate other diseases. I have already called attention to the nervous irritation, from local, sympathetic, and atmospherical irritants, as the principal cause;—to increased vascular action and disordered bowels, as the regular concomitant and maintaining force in the disease; —to the periodical recurrence of the symptoms which mark stages in the progress of the malady; —and to the successful treatment by means of alterative medicines and depletion.

§ 4. An irritable state of the brain, and inflammatory action of its vessels, is common to insanity of almost all kinds, and to nervous diseases of very dissimilar sorts. But the partial affections of the organs explain the peculiarities of the symptoms. Recent discoveries in physiology have taught us to regard the brain as a complication of many distinct organs, which are the material instruments of different sentiments, propensities, and intellectual faculties, of animal life. As the natural and healthy functions of these organs is different, so must they excite different maniacal ideas in a state of disease. We find, agreeably to this view, that when any particular organ be larger than ordinary in mad persons, their insanity often consists in some derangement of that particular faculty of which the large organ is the instrument. I have examined too many cases of melancholy, for example, to doubt of the following fact, which I have constantly found; that the organ of cautiousness, or that part of the brain under the upper posterior part of the parietal bone, is generally much developed in that modification of insanity. I have observed frequently a very large cerebellum in persons deranged by *furor uterinus;* and in those who, during their maniacal paroxysms, have manifested violent erotic propensities. I recollect two cases of persons with a natural genius for mechanics, who, when insane, raved of machinery, and who had the corresponding organs very large. I could enumerate an abundance of cases; but I shall forego the consideration of the external figure of the head as an indication of character, in the present stage of the inquiry, and shall confine my observations to the following limited branch of the subject, — that the preponderance of any particular sentiment, passion, or faculty, constituting the character or genius of the healthy subject, is strongly marked in his insanity, and predisposes to the kind of symptoms: and that when the cerebral functions have been so disturbed by moral causes as to bring on the disease, the symptoms of derangement often appear in those passions or faculties which have been greatly called into action, and irritated by the aforesaid moral causes.

But the disordered vascular action is always the attendant on the disease; and hence I infer, that the madness consists in derangement of material organs. I dwell less on the proofs I have derived from examining the forms of cranium, because I am aware of the unwillingness of the public to admit facts that can only be accurately ascertained by a laborious and continued direction of the attention to this subject almost exclusively. I shall, therefore, only allude to the cerebral organs casually, where the examples of the coincidence of forms of the head with the disease is particularly striking. If the present state and popularity of the science permitted me to speak in the strict language of my own opinion, I should say as follows:—The organs of the brain may be deranged separately or together, any number of them at once, or one separately: hence, patients are insane in one particular faculty, and judge of it by another; when the organ of cautiousness is the particular subject of cerebral irritation, the prominent characteristic of the insanity is fear and melancholy; the organ of ideality would add whimsical and imaginary dangers; the mysterizing faculty gives a superstitious turn to the illusion, and the patient then sees visions, hears angels sing, voices calling him, &c.; or, when the upper parts are deranged, he is religiously mad; when the organ of combativeness is morbidly active, he is raving and furious; or destructive if the part of the brain behind the ears be inordinately large, or be called into diseased action. When the symptoms vary or alternate, as fury, melancholy, &c., it is because the irritated or inflamed state is shifted from one to another organ. But I forbear any further allusion to the separate organs, and proceed to relate a few cases in the order of their phenomena.

§ 5. A patient of irritable and nervous constitution, with much ideality and cautiousness, became sensible of increasing irritability, and could not regulate his bowels by medicines. The circulation became more and more hurried; he had successively headachs, nausea, vertigo, and irregular spirits, and was sensible of monthly exacerbations of these symptoms: at length he felt a sudden and fixed melancholy, which, he assured me, came on as it were in a moment, and speedily went off after taking high food. He had, during the paroxysm, a maniacal fear of some far distant event, which he dreaded. About a month afterwards he was attacked again; he took purgative medicines, as he said, " this fear has a peculiar colouring; it is morbid." The disease became a continuous melancholy*, or insanity, with maniacal fear, varying in the sportive change of its object, with diurnal exacerbations. It subsided, during a change of weather, a month afterwards: but he had slight periodical returns. Some years afterwards, when he thought himself cured, he had some violent cause of anxiety: after this cause was removed, he felt constitutional melancholy, and said it was morbid:—"The swell of the ocean is left after the storm has passed away." He was so convinced himself that some organic part had been too much acted on, and had been left in a state of morbid activity in kind as well as in degree, that he made himself the subject of experiment, and, like many madmen, reasoned with metaphysical accuracy and precision on his hallucination. He took lowering medicines and diet, and great exercise, and by degrees lost the disease. But he had monthly returns in a slight degree, for about a year afterwards. This is a case in which, in a constitution predisposed, the violent excitement of a particular organ (or at least of a particular sentiment) led to a morbid and perverted activity of that organ after the exciting cause was removed; in consequence, as it would seem, of a catenation of morbid bodily symptoms, marked by determination of blood to the head. This latter circumstance was confirmed, during both the attacks, by a full and hurried pulsation of the carotids. The diurnal periodicity of the disease was shown by the flushing of the face and increase of action about noon; and its metastasis by the consequent change of the flushing to melancholy and fear about two o'clock. Finally, during the time it was not continuous, it evinced monthly paroxysms at the periods of irritability*. It seemed, in the first attack, to have been excited by atmospherical influence, as it occurred during the time of an epidemic, and an irregular distribution of aërial electricity; and it showed its connateness by affecting the largest organs, after a high degree of their ordinary excitement. I consider this case as instructive. I could advert to many others, with a similar history, wherein the symptoms varied according to the organization†.

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* Dr. Darwin has tried to establish a distinction between hypochondriasis and insanity. They appear to me only modifications.

* See my "Observations on the Casual and Periodical influence of Atmosphere on Insanity," to which I regard this paper as supplementary.

† Whether the casual or epidemic influence of the

The knowledge of this partial cause of the symptoms seems as yet to promise no improvement in practice, since we know of no local bleeding capable of draining particular organs. But it leads us to employ moral agents, conjoined with medical treatment, since we can excite the antagonist faculties of the mind, and thus try to divert the irritation, and, by this means, the impetus of blood. The medical practice will remain the same as before this particular circumstance was known, and will consist of alterative medicines and depletion, with good air, and as much exercise as is compatible with circumstances. To this consideration I shall devote the next section. Suffice it to say, that the popular treatment of the disease in general appears wrong, while an alterative and depletory course seems highly beneficial. Indeed, this plan is generally the best for all nervous complaints. Tonics and stimulants afford temporary relief, but lead to a worse state of the patient in the end.

atmosphere determines the seat of the cerebral inflammation or not, in some cases, I do not yet know; but I suspect it, since this influence has such a great power over the symptoms in epidemical complaints in general.

In the periodical returns of insanity, tonics are excessively hurtful. I should have said more here about the alterative and depletory treatment, if the excellent remarks of Dr. Mayo had not been published. Founded on long and successful practice, it is hoped they will rouse the attention of practitioners to the most important errors now committed in the medical treatment of nervous diseases. The facts I have hastily gathered from cases viewed in mad houses far distant asunder, and cursorily examined during a tour, cannot afford such substantial documents as observations made on the same cases in different consecutive stages.

On the periods of insanity, which are irregular and regular, daily and monthly, and the terms or course of the disease, which may be shortened by lowering, and aggravated by tonic and nourishing medicines, I have already stated my opinion. I hope to publish cases, from time to time as I make them out, from the numerous notes I have collected, and from others which have been transmitted to me.

§ 6. There are several other phenomena, which I may call collateral, in insanity, which tend to show that the symptoms of madness depend on irritation and inflammation of particular organs of the brain. I speak of irritation and inflammation as being concomitant in the disease; since, I believe, we may almost lay it down as a rule, that in inflammation there is always a high degree of nervous irritation previous to that increased action of the blood vessels which reacts on and maintains it. I must here advert to another fact in physiology, of almost equally general application, before I draw the parallel between affection of the organs of the brain and those of other parts; namely, — that the increased activity of the nervous and sanguiferous systems of any part, at first only increases the natural action of that part; but afterwards, when it proceeds to a greater degree, it produces an erroneous or perverted action. We shall see this equally apply to the brain as to other organs, on the supposition I have advanced respecting the cause of particular insanity; and thus we shall be able to corroborate our doctrine by a sort of analogical proof, founded on the general laws of physiology.

First, with respect to the five senses: — a certain quantity of activity in the retina, and of blood in the vessels of the eye, are necessary to sight; but if this quantity be increased, as in local inflammation of the eyes, vision is painful or distorted: the action of the optical organs is likewise perverted, and ocular spectres, *muscae volitantes,* and other illusive phenomena, occur in consequence of irritation and the increased momentum of the blood to those parts. A similar example may be taken from the imaginary sounds of voices in the ears, or the morbid sensation of smells, which do not exist in reality, but which seem to arise from an inflammatory and irritable state of the respective organs in the auditory and olfactory apparatus: these disorders, as well as deafness from what is called relaxation of the Eustachian tube, have gone away in many cases after accidental haemorrhages, or cathartic medicines. The cause of these complaints, as well as of all diseases usually denominated nervous, have been ably illustrated by Dr. Parry in his "Elements of Pathology." And I have seen the more obstinate cases of this kind cured eventually, by a course of depletory treatment, where tonic medicines have previously been used without benefit. I have seen also, in two cases, a similar treatment subdue obstinate melancholy, where the temporary relief afforded by tonics had already produced a worse state of the patient after the immediate effect of the stimulus had ceased. In both these cases, the part of the brain before alluded to as being the organ of cautiousness, was very large.

In many cases of insanity we can distinctly trace the disease through various stages, which illustrate its analogy to the diseases of other parts. At first, the increased activity of the organ of cautiousness is manifested by an unusual look of anxiety, exaggerated fears, and other marks of irritability. As the disease advances, these fears become more irrational; the melancholy sentiment becomes, as it were, fixed, and is associated with some maniacal delusion; the patient himself is even conscious of a change from an irritable to a perverted state of his feelings. The organs of digestion now appear more decidedly disordered, and the arterial action in the head is hurried. The same applies to other organs, according to the nature of the madness: those which are in nearer proximity seem to suffer the soonest, as it were from the general law of contiguous sympathy. Thus we find the organs of combativeness and destructiveness* fall the most readily into the disordered state; and maniacal fury, and a destructive disposition, alternate with, or accompany melancholy. In like manner, as the eyes and nose, the mouth, &c. are in catarrhal complaints affected with inflammation, either alternately or together. Another circumstance, which seems explanable on the same supposition, and tends also to justify me in regarding these kinds of insanity as having their particular seats in the organs alluded to, is, that we find those parts of the head which are most contiguous to the deranged organs become most often affected with disease in mania and melancholia. In these diseases the ears suffer more than the eyes: there are many more madmen deaf than blind. Violent fits of anger, which is an affection of the cerebral organ behind the ear, have caused temporary deafness. Great bleeding from the nose, or a violent flood of tears, has sometimes produced a temporary relief from melancholy and irritation, which can only be referred to its relieving the patient from the fulness of the cerebral vessels. The effect of wounds of the occiput on the functions of the cerebellum, is too well known to leave a doubt about the sympathy between the exterior part of the head, and the parts of the brain under them. It is by contiguous sympathy that we can explain the effect on the brain of excessive venery, and its tendency to madness: the inordinate action into which the cerebellum (or *organum amoris physici*) is called, produces an irritable and inflammatory state of that organ, which is extended in time to the organs of the cerebrum. I have observed, that the external parts of the head most affected in erotomania are the parts behind the ears, and over the nape of the neck, where an inflammatory state is not only observed, but found to be periodical. I could produce numerous other cases from the notes I have collected, did I not wish to avoid the odious imputation of swelling out a few hasty observations into a bulky volume.

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* I am compelled to use these terms, no others having been established whereby to designate the distinct and primary affections of the mind.

The periodical paroxysms of insanity show also its analogy to other diseases of particular parts connected with general disorder. Simple disorder of the bowels, headach, and general irritability, accompanied, perhaps, with some local inflammation, have often been found to be periodical. Dr. Mayo has noticed in insanity* the periodical ending in the continuous state, and then being cured. I have observed the same of fits of toothach, and other local affections of particular nerves.

Lastly; the success of the lowering treatment in insanity tends to establish the parallel. Do we not find in many local inflammations, particularly about the head, that by our first producing a healthy condition of the digestive organs. the symptoms abate, but that the local inflammation, not being subdued, keeps up the irritation, the digestion goes wrong again, and all is as bad as ever: recourse is then had to antiphlogistic measures of a more violent nature; the patient undergoes general depletion, and in time the affected part and general health get well together? Is not this often the process in insanity*?

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* See the Work above cited.

Thus the phenomena of insanity, both in the symptoms and treatment, show its physical nature, and its analogy to other diseases of particular parts, accompanied by general ill health, liable to periodical returns, best cured by alterative medicines and depletion.

Such a view of the subject, in proportion as it is confirmed by observation, must alter the practice in insanity. Instead of being deluded by the specious appearance of amendment under the tonic regimen, or of omitting medical treatment altogether, from the apparent incurableness of the disease, and the versatility of its symptoms, we must proceed steadily with the lowering plan. As soon as the first doubtful signs of the disease appear in the periodical paroxysms of unusual irritability, we must note the circumstances before alluded to as denoting the determination of blood to the head, and must advert to the state of the abdominal viscera. These must become the first objects of attention, since experience has shown that we cannot expect any amendment in the nervous symptoms while the organs of digestion remain disordered. If by alterative medicines the healthy state of these functions be not effected; or if the nervous symptoms do not subside with the visceral disorder, more active measures must be adopted, such as stronger cathartic medicines, repeated bleeding, and abstinence*. The manner in which such general and continued depletion acts in the cure of local inflammation remains unknown: but the balance of action in the sanguiferous system, and of excitability in the brain and nerves, seem to be restored by such means, both in madness and in a numerous train of other nervous maladies. The obscurity of the cause of these diseases is increased by the periodical fits in which they happen, many of which occur in particular seasons, or in daily and monthly paroxysms, referrible to atmospherical causes. The facts, however inexplicable, are undeniably true, and merit general attention. These periods will, in some measure, direct the conduct of the physician. We may prepare against the attack, or forcibly break the chain of consecutive symptoms. At the monthly periods, too, the crisis of certain forms of disease happen. These are also important, as it is injurious to begin certain remedies just before the critical exacerbation of many complaints.

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* Consult Spurzheim on Insanity: Hallè sur la Manie Atrabilaire, &c. &c. &c.

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* The Case which, being related to me by a foreign physician, first suggested this opinion, was that of a man who, after the alterative plan *alone* had failed, recovered of a bad paroxysm after copious bleeding from wounds which he repeatedly gave to his own body. I have lately read of two similar Cases.

Rational views of the physical nature of insanity, if duly acted on, may invalidate the charge brought against the practice in this disease —

of making gaols of lunatic hospitals; of treating the insane more like prisoners than patients; of grouping various kinds of madmen together; and of fulfilling the character of mad houses; an epithet which the satirical pen of some continental writer has applied, as designating houses manifestly ill calculated for mad men.—These errors have partly arisen from the prevalence of a prejudice that insanity was the disease of a Being essentially distinct from the Body, and, therefore, not regulated by the ordinary laws of animal life.

The identification of the mind with the material organs is not intended to be understood by this allusion: but I insist on the disorder of the organs as the cause of madness.

I will not pretend either to defend or to dispute the propriety of the nomenclature used for the organs; but it serves to express the distinct faculties of the mind, whose organs have been named according to the new doctrine, the principles of which now begin to be admitted by the ablest physiologists*.—I have alluded to the general principles of this theory, in order to afford a more extensive opportunity to those who have the care of the insane, to investigate, and thereby to confirm or to confute the particulars. I have myself constantly noticed, in examples too numerous to detail, that mad persons are often deranged in the manifestation of those passions and faculties whereof the material organs (according to Gall's and Spurzheim's division) are the largest. While I proceed with and solicit research, I do not pretend to enough knowledge of insanity to assert positively the universal application of this theory. But facts are always useful; and the publication of them, by exciting inquiry, may lead to a nearer knowledge of their causes.

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* I refer the reader to Dr. Spurzheim's Plate of the Brain.

FINIS.

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